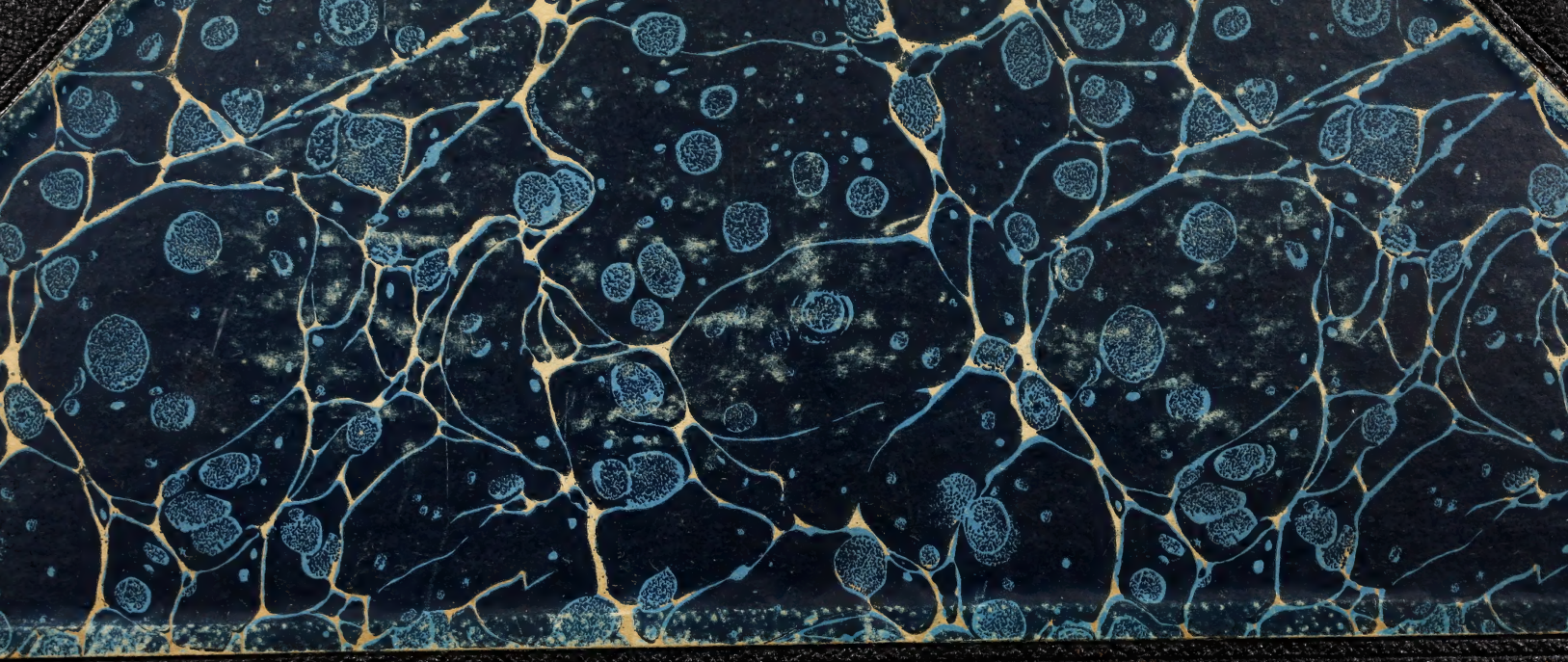

SHOUT
SHARE
IT

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 1019

Contribution from the Bureau of Markets and Crop Estimates
H. C. TAYLOR, Chief

Washington, D. C. April 14, 1922

MARKETING BROOM CORN

LIBRARY
R
★ APR 1
U.S. Department of Agriculture

By

G. B. ALGUIRE

Assistant in Marketing Hay and Broom Corn

CONTENTS

	Page
Use and Importance of Crop	1
Preparation for Market	2
Selection of Brush	3
What Not to Harvest	3
Thrashing	4
Curing	7
Baling	10
Marketing at Country Points	11
Kinds of Dealers	11
Time of Movement	15
Principal Country Shipping Points	16
Opening the Market	16
Marketing at Country Points—Contd.	
Methods of Marketing	18
Sampling	25
Country Storage	26
Transportation	28
Methods of Loading at Country Points	28
Channels of Traffic	29
Principal Terminal and Manufacturing Points	30
Cooperative Marketing	30

WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 1019

Contribution from the Bureau of Markets and Crop Estimates
H. C. TAYLOR, Chief

Washington, D. C. ▼ April 14, 1922

MARKETING BROOM CORN.

By G. B. ALGUIRE,
Assistant in Marketing Hay and Broom Corn.

CONTENTS.

	Page.		Page.
Use and importance of crop	1	Marketing at country points—Cont'd.	
Preparation for market	2	Opening the market	16
Selection of brush	3	Methods of marketing	18
What not to harvest	3	Sampling	25
Thrashing	4	Country storage	26
Curing	7	Transportation	28
Baling	10	Methods of loading at country points	28
Marketing at country points	11	Channels of traffic	29
Kinds of dealers	11	Principal terminal and manufacturing points	30
Time of movement	15	Cooperative marketing	30
Principal country shipping points	16		

USE AND IMPORTANCE OF CROP.

Broom corn is a comparatively small crop and has a limited use, therefore it has failed to command the attention of the marketing agencies which have played such an important part in developing efficient systems of distribution for the more important products. Broom corn is marketed to-day by much the same methods as those employed 70 years ago, but with the advent of regulatory measures, grading rules, and other means of bringing about a more just and economical distribution of important commodities, growers, dealers, and manufacturers find that the absence of similar advantages for broom corn leaves much to be desired in the development of better market practices.

In the manufacture of brooms, broom corn[1] has been replaced only to a very small extent by substitutes. Grass, rattan fiber, bristles,

[1] The term broom corn is applied to the growing crop, also to the brush or that part of the plant used in the manufacture of brooms. The words "brush" and "heads" usually mean the portion consisting of the "stem," "knuckle," and "fiber," the word knuckle applying particularly to that portion of the brush where the fiber is attached to the "stem." The stem is the uppermost portion of the stalk below the fiber, or the portion that is harvested with a fiber. (See plate I.) The "boot" or "sheath" is the leaf sheath that encircles the stem of the brush. "Hurl" as applied to broom corn includes brush of suitable color, fiber, and length for use on the outside of brooms. "Insides" and "covers" are the brush used for the interior of brooms. "Butting" is a process by which the butts of the broom corn are evened up. (See plate IV, fig. 1.)

broom weed, and, possibly, other commodities have been used to replace it with varying degrees of success, but usually the substitute has been worked in with the broom corn in manufacturing and has not entirely replaced it.

The fiber of broom corn has very little use except for broom making, but the demand for brooms has remained rather uniform over an extended period, and a limited quantity of the raw product finds a market each year. This quantity is roughly estimated at about 50,000 tons, and approximately 300,000 acres are necessary for its production. Substitutes for brooms have appeared on the market, but the increased population has tended to keep the demand stable.

Value of the broom corn crop and its importance in the States where extensively grown.[1]

State.	Year.	Acreage.	Average yield per acre.	Production.	Average farm price per ton Dec. 1.	Farm value Dec. 1.
			Pounds.	*Tons.*		
Illinois	1920	18,200	500	4,600	$175.00	$805,000
Missouri	1920	4,500	465	1,000	145.00	145,000
Kansas	1920	20,000	375	3,800	89.00	338,000
Texas	1920	33,000	230	3,800	118.00	448,000
Oklahoma	1920	105,500	324	17,100	129.00	2,206,000
Colorado	1920	7,000	370	1,300	70.00	91,000
New Mexico	1920	11,000	420	2,300	100.00	230,000
Total	1920	199,200	340.4	33,900	125.73	4,263,000
United States	1919	262,600	386.9	50,800	153.64	7,805,000
Do	1918	366,000	315.8	57,800	220.93	[2] 12,770,000
Do	1917	345,000	332	57,400	292.75	[2] 16,804,000
Do	1916	235,200	330	38,726	172.75	6,690,000
Do	1915	230,100	454	52,242	91.67	4,789,000

[1] Monthly Crop Reporter, vol. 6, No. 12, p. 139.

[2] The high cost of labor, the increased cost of machinery, and large Government contracts for brooms during the war are given as reasons for the noticeable increase during 1917 and 1918.

PREPARATION FOR MARKET.

Two varieties of broom corn are produced in the United States—Standard and Dwarf. The methods of cultivation are similar, but because of the peculiar difference in their growth, the tendency has been to adopt different methods of preparation for market. Success in handling either variety is dependent to a large extent on proper care during the harvesting period. Even with the most efficient systems of distribution it is impossible to overcome the handicap of an inferior product. A study, therefore, of the process of preparation becomes an important part of the analysis of the marketing situation. Methods of harvesting, thrashing, and curing broom corn have been discussed briefly in connection with the production of this

crop in previous publications of the Department of Agriculture,[2] but it is desired to bring out here a few of the principal points in these operations which have a direct bearing on the marketing of this commodity.

SELECTION OF BRUSH.

The selection of properly matured heads commands first attention. Broom corn is in the proper stage for harvest when the fiber is deep green from tip to knuckle. This stage may be reached when the head is in bloom or not until the seed is in the dough stage. If harvested too young the fiber will be pale green to white at the knuckle. This immature fiber lacks elasticity, shrivels perceptibly on curing, and presents an uninviting appearance when baled. Overripe brush is equally undesirable, for it becomes harsh and brittle and usually shows red or red specks, particularly if the harvest has been delayed on account of wet weather.

WHAT NOT TO HARVEST.

Preventable waste among manufacturers can be traced in many instances to the first steps in harvesting. Just what constitutes waste, however, is not easily determined, as certain kinds of brush that go to the trash pile in one factory are utilized by another. There are, however, some well-defined types generally considered not profitable to use. (See Pl. II.) These are "spikes," large center-stemmed brush, weather-stained "crooks," and extreme curly growth. Spikes, which are small, undeveloped heads with scant, short, and often immature fiber, are used by manufacturers, if at all, to stiffen the body of the broom. Their value in broom-making is limited, and many factories consider them a total waste. Heads having large center stems, especially those having no well-defined knuckles (Pl. II), add materially to the expense of working broom corn and their value in the harvest is very much questioned. "Crooks," or heads that are sharply curved just above the knuckle, while often of excellent fiber, are frequently not profitable to harvest. This depends upon the prevailing quality and market value of broom corn generally. In periods of low prices it seldom pays to gather them, because the price received is usually less than half that paid for good brush or similar fiber. If prices justify the cutting of crooks, they should be harvested and handled separately, or, at any rate, be removed from the bulk of the crop before being thrashed, because they interfere materially with the general thrashing. In certain sections curly growth is frequent. This growth is considered of little value, and "burly" heads which are both short and twisted

[2] Rothgeb, B. E. Dwarf Broom Corn, U. S. Department of Agriculture, Farmers Bulletin 768. Standard Broom Corn, U. S. Department of Agriculture, Farmers Bulletin 958.

should be left in the field. If the harvesting of broom corn is properly done there will be very little trash, such as leaves and boots, on the brush. In general, it may be said that anything unfit for use in the manufacture of brooms should, so far as practicable, be left in the fields.

THRASHING.

To command the best price, broom corn must be free from seed. The operation of removing the seed is variously termed seeding, scraping, or thrashing, and this phase of the preparation for market probably has been criticized more than any other. The value of the brush is materially affected by the quality of the work performed.

MACHINERY USED.

There are two kinds of thrashers—hand-fed and machine-fed. Essentially, a thrasher consists of a frame with one or two cylinders, the surface of which is equipped with teeth or spikes. If double cylinders are used, one is set above the other and they are run in opposite directions. Self or machine fed thrashers are so arranged that the broom corn is conducted to the cylinders by means of a toothed chain that runs at an angle with the cylinders in such a manner as to permit the brush to extend farther and farther between them as the brush is carried along. The seed from the tip portion is first removed and by the time the brush has been carried to the rear table the cylinders have scraped the seed from the entire length of the fiber. A power machine such as described (see fig. 3, page 10) with a crew of 20 men can thrash the brush from about 30 or 40 acres in one day. Hand machines are little used except for individual work. Such machines usually are of the one-cylinder type and are hand-made. In thrashing with this type the brush is held firmly with the hands and applied to the rapidly revolving cylinder.

Thrashing machines of either type, if run at the proper speed and operated with sufficient and competent help, will do good work. With hand-fed machines, if the broom corn has been delivered from the field in a satisfactory condition, there seems no reasonable excuse for poor thrashing, because the brush can be applied to the cylinder until all of the seed is removed. With power thrashers much broom corn is poorly thrashed. The principal causes may be summed up as follows: Improper handling of the crop prior to its thrashing, improper feeding, carelessness in operating thrasher, incompetent and insufficient help, windy weather during the thrashing period, night thrashing, and willingness on the part of interested parties to leave seed on the brush.

PRIOR PREPARATION IMPORTANT.

Close study reveals that much of the criticism of current practices in thrashing broom corn more properly belongs to the preparation

FIG. 1.—WELL-LIGHTED WAREHOUSE, SHOWING METHODS OF DISPLAYING BROOM CORN FOR SALE.

FIG. 2.—"OPEN-AIR" STORAGE AT COUNTRY SHIPPING POINTS.

GOOD AND POOR HEADS OF DWARF AND STANDARD BROOM CORN.

(*a*) A good grade of crooked: (*b*) high grade whisk stock; (*c*) group of spikes, worthless, but often harvested; (*d*) poorly tipped brush showing also a heavy undesirable center stem; (*e*) high grades of Standard and Dwarf, round straight fiber, full tipped with smooth well defined knuckles, no center stems: (*f*) objectionable curly growth but marketable: (*g*) worthless curly brush: (*x–y–z*) sectional view of brush showing (*x*) stem, (*y*) knuckle, (*z*) fiber.

prior to removing the seed. Improper thrashing induces great waste, but much of the waste in thrashing is unavoidable unless the brush has been delivered in a satisfactory condition. It is obviously impossible at this stage of preparation for market, for thrashing crews to take the time necessary to disentangle brush, or to remove foreign and worthless material, such as husks, surplus stalks, spikes, burly brush, and crooks. It is essential, therefore, that broom corn receive the proper attention prior to its thrashing.

PROPER FEEDING IMPORTANT.

The importance of feeding broom corn into the feeder chain properly should not be overlooked, because, once inserted, the brush passes through without giving further opportunity to retain or arrange it so as to remove any seed the cylinders fail to touch in the regular operation. In feeding, the brush should be arranged so that all seed to be removed must pass along not closer than 4 inches to the chain. Broom corn of ordinary length has little or no seed within 4 inches of the knuckle and this permits feeding so that the feeder chain may engage the fiber just above the knuckle, thus preserving the stems of the brush and preventing undue loss of brush, which sometimes occurs when the stem has been engaged by the feeder chain and crushed. The amount of brush fed should be uniform. The cylinders will remove the seed better if the layer of broom corn engaged is not too thick. Large handfuls crowded in the feeder chain "slug" the machine and decrease the speed for a moment and the central portions pass through poorly thrashed. Best results are obtained by having sufficient help to furnish the feeder a steady stream of brush about 2 inches deep and well butted.

OPERATING DEFICIENCIES.

Machinery for thrashing is simple in construction and is easily kept in proper condition, but it is often neglected and becomes the source of much waste and poorly thrashed broom corn. Bent cylinder teeth or the loss of teeth hinder proper thrashing and loose bolts are the forerunners of breakdowns, which cause loss of time to large crews, allow brush to become overripe, and result in much waste. The speed of the cylinder is an important factor in thrashing and any inattention, resulting in too low or too high a speed, is detrimental. Too low a speed results in the heads passing through without being sufficiently scraped. This is particularly true when the seed is immature or chaffy. Too high a speed removes with the seed the fine fiber on which it grows, destroying the full tip of the brush so much desired by all broom manufacturers.

No set rule can be given for the proper speed. It is governed entirely by the condition of the broom corn and the size of the cylinder.

A speed of 1,200 to 1,500 revolutions per minute is recommended for power machines by the manufacturers.

Much poorly thrashed broom corn results from insufficient and incompetent help. Instances are common where thrashing is undertaken with insufficient help to straighten the brush as fast as the thrasher will remove the seed. In the effort to supply the needed brush the proper butting of it is neglected, so that the feeder chain is not engaged properly and the brush either fails to come in contact with the cylinders or to engage the feeder chain at all and becomes waste in the seed pile.

HIGH WINDS DETRIMENTAL TO THRASHING.

High winds disarrange brush not only when being handled in the field but when being thrashed. They are particularly troublesome where thrashing is done from the rick. The dry broom corn is light in weight and unless amply protected is disarranged on the table. If it passes between the cylinders not properly butted, the heads that are disarranged frequently fail to come in contact with the cylinder teeth and pass through untouched. Tarpaulins stretched up on the side from which the wind blows are usually sufficient to overcome much of the trouble.

NIGHT THRASHING.

When there is a scarcity of thrashing machines or when the broom corn has matured rapidly, the danger of loss through overripe brush stimulates nightwork. Night thrashing usually results in work below the standard that is ordinarily expected from day thrashing, but it is generally practiced when the necessity demands and it can not always be avoided.

INTENTIONALLY LEAVING SEED ON THE BRUSH.

Willingness on the part of the interested parties to leave seed on the brush too often is the cause of unsatisfactory thrashing. Extensive inquiry indicates that about 25 per cent of the growers are indifferent to good thrashing. Instances have come to attention where, in order to increase the weight on sale, the grower has requested that the seed be left on the brush. Such an attitude tends to lower the standard in a district, and the practice should be condemned. It is a fallacy for growers to suppose that poor seeding means added profits to them by reason of the extra weight, for buyers are fully aware of the practice and adjust the condition by heavily discounting the price; so while growers may feel they have received more for their broom corn, in reality they have received less.

The results of poor thrashing are far-reaching. The seed has no value whatever to the manufacturer but adds to his cost of producing

brooms. If allowed to remain, it interferes also with the uniform dyeing of the brush. It must be removed at the factory with hand-fed thrashers before the manufacturing process can be completed. This results in a duplication of labor, and additional expense is entailed in hauling this waste material from the factory. The freight charges are increased on account of the seed which is shipped to market with the brush. These additional costs obviously lessen the profit derived from the industry and are reflected in lowered prices for the raw material.

CURING.

Climatic conditions have been largely responsible for the marked difference in the methods of curing the two varieties of broom corn. The Dwarf variety for the most part is grown in higher and drier altitudes than the Standard, and, owing to the limited rainfall, is less likely to be seriously damaged during the harvest. The possibility of ricking in the open and postponing the thrashing until other farm work demands less attention is inviting to growers in these sections and has been practiced rather extensively in preference to shed curing.

RICK CURING.

Rick curing is practiced extensively and is the preferred method where sheds are not available, but is far from satisfactory and frequently the losses sustained in one season from weather damage alone are as great as the cost of erecting suitable protection. Broom corn should be sheltered from sunlight and rain. Rick curing does not have these advantages and is not recommended where best results are desired. The brush must undergo a partial curing in the field, and if ricked too green it invariably molds. If the brush does not become weather-stained, the surface of the small piles bleaches more than the interior, and the color is not uniform. This is noticeable in the bale, which, when marketed, brings a lower price.

As a precaution against weather damage the entire rick should be thatched with broom-corn stalks or other material. When thus sheltered broom corn sustains comparatively little damage from weather unless severe storms occur. (See Pl. III, fig. 2.)

A method of outdoor curing which many consider much better than ordinary ricking is coming into use in some sections. A suitable frame for shelving the brush, similar in construction to that shown in figure 1, is provided. Layers of broom corn are placed between the slats, the lowest being filled first. A layer is next placed in the space provided just above, and so on, until the rack or frame is covered. By this method ample circulation of air is provided, thus permitting the shelving of corn that is comparatively green. With favorable weather the material is cured quickly.

SHED CURING.

The best method of curing both Standard and Dwarf broom corn, and at present the only method of curing which offers assurance of a uniformly colored, dependable product, is to place it under sheds. For the best grades, a pea-green color is essential, a bright pea-green color being evidence of care not only in harvesting but in curing. The lack of it is evidence that the crop is overripe, immature, bleached, or otherwise damaged. Pea-green brush, if of good fiber, desirable length, and well baled, is in best demand in all markets and commands the top price. To produce it suitable housing space must be provided, equipped with slats or shelves where the brush can be spread out thinly, permitting a circulation of air above and below each layer. The shelving is best made by using cross-section slats on which other slats are placed, forming shelves at intervals of about

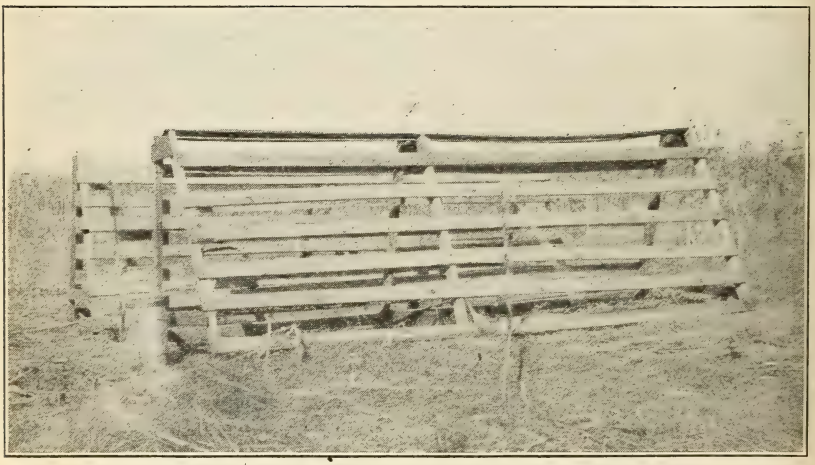

FIG. 1.—Rack on which broom corn is shelved in the open for curing.

4 inches. On these slats the brush is placed about 2 inches deep. Unless dry weather prevails during the time of curing the piling of brush more than 2 inches deep is likely to result in mold. As a precaution against loss the brush should be examined frequently to see that it is not heating, as damage from either heat or mold lowers the value appreciably.

Though open sheds are preferable for rapid curing, the damage from wind and rain often makes additional protection necessary. The ends and one side of curing sheds are sometimes sheeted with good results, and canvas that can be raised or lowered has proved effective in protecting the brush during storms. Since only about two weeks of favorable weather are necessary before broom corn can be "bulked," barns, cow sheds, etc., can be made to serve as curing places unless the crop is large, in which case a suitable shed made especially

for the purpose should be erected. A typical broom-corn curing shed is shown in figure 2.

Whatever the method employed in curing, the essential thing is to arrange the brush while green in thin layers away from rain and the direct rays of the sun and where winds will not disarrange it. It must be thoroughly dried. No attempt should be made to bale until the stems will break readily under pressure of the fingers.

KILN DRYING.

Another method of curing is kiln drying, which follows a wilting period of a day or two. This method is still in the experimental stage and as yet is confined to the districts in southern Texas. To facilitate quick drying a plan for artificially heating the broom corn is being perfected. A brief description of one of the plants will best serve to describe the process (see plate IV, fig. 1).

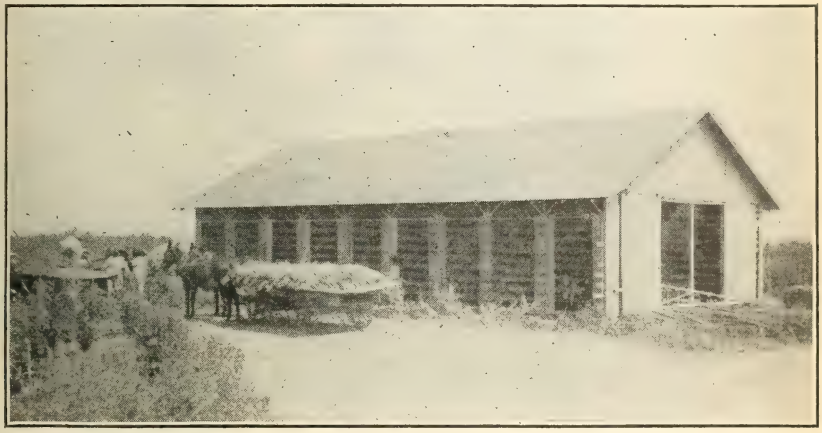

FIG. 2.—A typical curing shed for broom corn.

The drying room consists of an airtight compartment about 20 by 70 feet and 8 feet in height. This room is asbestos lined to retain the heat. Beneath the floor, throughout the length of the room, extend two large flues, through which hot air is conducted to openings in the floor, which permit the hot air to enter the drying room at designated places. At the top of the room at one end are openings to allow the air to return to the heating chamber.

The heating chamber, which contains several hundred feet of steam-heated pipe and is equipped with blowers, is connected with the flues that pass under the drying chamber and also with the return flues that carry the air back from the drying chamber. Thus there is provided a means for a complete circulation of heated air from the blowers, around the heating coils, into the drying chamber and back again to the blowers. Provision is made at the top of the

drying chamber for ventilation in case too high a temperature endangers the broom corn.

Trays are provided on which to place the green brush as soon as thrashed. These trays consist of frames with wire bottoms, which telescope into each other, forming tiers as high as desired. They are filled about 4 inches deep and placed one on top of the other on a truck, which is then rolled into the drying chamber. This process is continued until the entire chamber is filled. There is room in the drier for 28 trucks of trays each of which when filled contains about 200 to 400 pounds, depending on the dryness of the brush. The capacity of the drier is from 4 to 6 tons of broom corn. When the hot air has been applied from 6 to 12 hours the brush is ready for baling, whereas it takes from 12 to 15 days to dry broom corn in open sheds by the open-air method of curing.

FIG. 3.—Thrashing broom corn with power thrasher. Note the waste underfoot and the poorly shelved broom corn at the extreme left.

The operators claim that the following advantages besides others are procured through using a kiln for drying the corn: Delivery about 15 days earlier than with open-shed drying; better color because of ability to dry in wet weather, thereby saving crops that otherwise would spoil; elimination of moldy brush; and the production of a tougher fiber. They also claim that buyers will pay from $25 to $35 per ton more for the kiln-dried brush. The average cost of kiln drying brush at the plant described is estimated to be about $11 per ton.

BALING.

Better prices are obtained for well-baled broom corn than for brush of the same kind and grade that is poorly baled. The baler is filled with brush by hand. Small armfuls are placed alternately against each end until the baler is full (see Pl. IV, fig. 1). A crew of nine men with a horsepower baler can bale about 50 bales a day. The bale should be firmly packed, square with smooth ends devoid of protrud-

ing fiber, evenly and tightly tied with five strands of No. 9 wire, and, preferably cross-tied with lighter-weight wire. Only well-cured and merchantable brush should be used, and as a matter of protection and appearance care should be exercised in having the brush well "butted" before it is placed in the bales.

STANDARD-SIZED BALES.

A standard bale of broom corn is 45 inches long, 26 inches wide, and 34 inches high. As found on the market, however, a bale usually is about as high as it is long and varies in weight from 300 to 425 pounds, depending on the fineness and quantity of brush used.

Bales of standard length and width load in cars without dead space, whereas odd-sized bales do not. Standard-sized bales are preferred because shippers are unable to load off-sized bales to the minimum load stipulated and are thus compelled to pay higher freight charges.

CROSS-TYING.

Since the bulk of the broom corn is shipped from country points to terminal markets and is often subjected to rough handling in transit, the regular method of baling is not always sufficient to insure its arrival at destination in good shape. Stocks that present an uninviting appearance on the sales floor usually command a lower price than do well-made bales of equal grade and quality. A comparison of the two bales in Plate IV, figure 2, clearly reveals the importance of care in preparing bales for shipment.

As a precaution against damage in handling, cross-tying has come into general use. The method employed is to connect the two opposite end wires of a bale with somewhat lighter wire than that used in baling to prevent the outside bale wires from slipping. Usually four cross-ties are used. They are placed at each of the four sides, preferably underneath all five of the bale wires. As the Dwarf variety has small stems it is more difficult to bale neatly than the Standard variety, the ends of the bales tending to taper somewhat. This variety, therefore, particularly needs cross-tying to prevent the outside wires from slipping.

If baled broom corn is not marketed immediately after being baled it should be stored in a dry place protected alike from the direct rays of the sun and from rainy weather.

MARKETING AT COUNTRY POINTS.

KINDS OF DEALERS.

It is practically impossible to classify the various broom corn dealers, because of the overlapping of the functions that each performs. A dealer, for instance, may be generally known as a resident

or local buyer. As such he has his home at some distributing point and purchases for cash the broom corn arriving on his market. If abnormal conditions develop in his territory he may be unable to obtain his requirements at home, so he goes to other districts to purchase. He then becomes a traveling buyer. Or possibly he may do what is generally termed wholesaling, but may be a retailer as well.

The term "commission man" is probably more confusing than any other, because it is applied to certain dealers who, on account of the many laws enacted to control the handling of farm products sold on commission, have changed their methods of doing business so that their activities do not come within the jurisdiction of these laws. Reference is made particularly to those who buy broom corn outright, and therefore become temporary owners of the brush, yet receive a stated commission on the transaction. These men are commonly termed "commission buyers."

Commission men, however, are generally understood to be dealers who receive broom corn to sell on a commission basis. They have no financial interest in the corn and act only as agents; consequently the term is made still more confusing when it develops that some commission or consignment merchants also purchase and sell for their own account. It will be seen, therefore, that a designation that may seem specific may develop to be one with decidedly arbitrary meaning.

WHOLESALE DEALERS.

The large wholesale dealers probably study market conditions more closely than other classes of buyers, and considerable importance is attached by the smaller and less influential dealers to their activities.

It is estimated that about one-half of the broom corn raised in this country is purchased at country points by these firms, the bulk being stored in immense warehouses and distributed throughout the year as needed by the various factories. Since it is necessary for them to carry large stocks over long periods of time, their success necessarily is measured by their ability to anticipate future market conditions and to avoid, in part at least, the hazardous speculation usually attending the marketing of this commodity. To do this, large amounts are expended each year in determining the probable acreage, yield, and quality, the general demand for brooms, and any other factors likely to indicate the trend of the future market prices.

Many of the wholesale dealers represent large financially responsible organizations that employ traveling buyers who keep their firms fully informed regarding prevailing conditions, in addition to buying. With such an organization it is possible for a firm to be in constant touch with conditions at all important shipping points and to direct the buying from a central office. The advantages are apparent.

When certain markets are glutted and weak, the buyers at those points may be instructed to purchase heavily, while other buyers for the firm are inactive at the markets where prices appear too high or where there is too much competition. The result of this method of purchasing is a much lower average buying price.

TRAVELING BUYERS.

While many buyers who travel are employed by large firms, the term "traveling buyer" is applied more particularly to those whose remuneration is on a commission basis. Their business is to supply the manufacturers with broom corn in carload lots direct from the producing sections. They might be termed wholesalers, but since in many cases every carload sale represents a complete transaction and often a "turnover" of all capital invested they are not generally so designated.

Traveling buyers usually procure orders in advance of purchase, either through advertising in trade journals or through manufacturers with whom they previously have had satisfactory dealings. Many manufacturers, not wishing to visit the producing sections themselves, employ these men to purchase to the best possible advantage the broom corn necessary to meet their requirements. Many traveling buyers have built up a very creditable business by close and careful buying, and where reasonably satisfactory purchases have been made they have retained old customers over a period of years. It should be clearly understood, however, that this kind of business is successful only when good business relations have been developed and when the particular needs of the manufacturer are well known from previous handling.

Though it is true that traveling buyers have their own cars, travel where and when they please, and have no office expense, clerk hire, taxes, nor insurance, there are a few things that greatly handicap them. Most important among these, especially during years of heavy movement, is lack of storage and shipping facilities.

LOCAL RESIDENT BUYERS.

Local resident buyers are the "old guard" in the buying of broom corn at country points. Where they have built up a business by fair dealing and close personal acquaintance with growers, traveling buyers find business decidedly competitive. This is particularly true where local buyers own ample storage facilities.

At most of the important country-point markets there are from two to five resident buyers. Their business, like that of the traveling buyer, is to supply manufacturers with broom corn direct from the field. The practice with most dealers is to procure orders and

then drive through the country, purchasing here and there in small lots and concentrating these purchases at some shipping point until a carlot shipment can be made. They then make the shipment and make a draft through the bank for the cost of the corn plus their profit. Local bankers often furnish resident dealers with their operating money. Where orders are not obtained in advance, broom corn is purchased, concentrated in storage, and held until prices are satisfactory or orders are obtained.

ONE-MAN MARKETS.

In extremely small towns and in a few of the larger ones there is frequently but one local shipper. As in hundreds of other towns, he usually handles the bulk of the mercantile business. He buys everything the farmers have to sell and sells everything the farmers need to buy, controls a bank or two, and, in a general way, realizes on nearly everything going out or coming in. He lends money on the crops and buys the bulk of them. When the marketing season is over, some farmers are satisfied but others may feel that advantage has been taken of them.

Where one buyer handles the bulk of the broom corn the market may be more or less monopolized. In studying these small markets it has been noted that traveling buyers on entering a market will first visit the local dealer. Frequently they find it to their advantage to buy, or arrange to have the corn they require purchased, on commission. This is natural, since the commission is very little if any in excess of what it would cost a traveling buyer to hire an automobile and spend several days going over territory with which he may not be familiar. Besides, he must bid up on the broom corn to get it at all, and he must see to the delivering, weighing, and shipping himself. The local buyer, knowing this, offers him a carload out of his warehouse as cheap or cheaper than he could go out and buy it. With the field clear the local buyer can and does buy cheaper.

Another method of keeping out buyers is to "bid up" on small crops here and there over a district. When the traveling buyer goes into the field he finds the broom corn held at a much higher figure than he is willing to pay and leaves the district without buying.

LARGE MANUFACTURERS.

The large manufacturers, as well as the large dealers, employ field men either on a commission or on a salary basis. With some of these large factories buying broom corn is a matter of speculation. The buyers retained in the field report conditions, and if it is felt that the conditions justify they buy a year's supply during the busy marketing season. This practice involves a large outlay of money, which is tied up in the business for the whole season.

SMALL MANUFACTURERS.

The bulk of the broom corn is used by small factories that are too small to keep a regular buyer in the field and yet are large enough to justify early purchasing. The small manufacturers often go to the producing sections and either purchase their supplies themselves or get resident or traveling buyers to purchase them. In either case the personal inspection of the broom corn at points of origin is the thing desired. The small manufacturer is usually a good bidder. He enters the field to buy his year's supply, which may amount to only two or three cars. Formerly he purchased from a dealer, paying the extra price for the privilege of being supplied when his needs demanded. With him it is a case of purchasing quickly with the least possible overhead expense and returning with his purchase to the factory. These buyers usually prefer a street market.

TIME OF MOVEMENT.

Broom corn is first available in Texas. The movement begins in the Rio Grande Valley usually between July 1 and 10. The season of heaviest movement from country points extends from this time until the Colorado broom corn moves in October.

Under present methods of marketing there seems to be a decided tendency among growers to turn this commodity into money as soon as baled. There are several reasons for this. Farmers, as a rule, borrow money to raise or harvest the crop. This usually is short-time paper, drawing 10 per cent interest. The banker is therefore financially interested and, while usually willing to extend credit, more frequently advises early selling, particularly if prices are at all favorable. If prices are decidedly unfavorable and large amounts have been lent to farmers, the banks often feel forced to protect their depositors by calling on the growers to liquidate their indebtedness. This they do by selling at whatever price they can obtain.

Uncertain trends of market prices make the holding of broom corn with a view to greater profits decidedly problematical. Farmers generally show little inclination to hold their product if it is possible to obtain what they consider a reasonable price. This tendency often prevents their receiving a fair price, since the markets are frequently glutted by their efforts to effect early sales. A glutted market is invariably a weak market, which reflects lower tendencies, and this often creates a fear of still lower prices and increased offerings—a condition favorable to dealers but decidedly unprofitable to growers.

Another factor which has stimulated early selling is the opportunity presented to growers to sell early in the season. As the first aim of all dealers and manufacturers is to purchase brush that meets their particular requirements, the importance of being in the field to buy

during the busy marketing season is obvious. By so doing they have opportunity of greater selection and are more likely to supply their needs at less overhead expense. This desire on the part of some forces the others to go to the fields early, so that few buyers are in evidence after the bulk of the crop has moved. Realizing this farmers sell early in the season if possible. The fact that a neighbor has accepted an offer on his broom corn often induces another to sell.

PRINCIPAL COUNTRY SHIPPING POINTS.

Limited quantities of broom corn are produced in about 40 States, but the commercial production during the last few years has been within the States of Oklahoma, Texas, Kansas, Colorado, New Mexico, and Illinois. (See table, page 2.)

Some of the principal marketing points in these States at present are as follows:

Arcola, Ill.	Fairview, Okla.	Mattoon, Ill.
Alice, Tex.	Guymon, Okla.	McAllen, Tex.
Beeville, Tex.	Holly, Colo.	Portales, N. Mex.
Charleston, Ill.	Laverne, Okla.	Shattuck, Okla.
Elk City, Okla.	Liberal, Kans.	Syracuse, Kans.
Elkhart, Kans.	Lindsay, Okla.	Texline, Tex.

OPENING THE MARKET.

In analyzing the factors affecting the probable prices of broom corn on the opening of a market it must be borne in mind that this commodity is not a staple like wheat, and that its commercial importance has not justified boards of trade at big market centers where the volume of business transacted makes possible daily market quotations as a basis of arriving at values; hence dealing in broom corn is attended with much speculation and there is usually a wide range of prices.

At the opening of the markets, which occurs in southern Texas in July, the uncertainty of future market conditions is greatest, and the probable prices become a matter of much conjecture and invariably continue to be so until they actually are established.

The probable production commands closest study, for on this depends the demand at the close of the season, particularly with reference to kind, that is, whether "hurl" or "insides." If it develops, for instance, that there is an extremely short crop, there will be an early demand and generous buying, which on the whole tends to raise the price.

The probable surplus or carryover of the last year's crop is a factor to be considered, and the kind of brush constituting the bulk of this surplus is especially important. For example, if manufacturers have large quantities of short brush toward the close of the

season and no long broom corn with which to work it up (a condition common with many in the spring of 1919), naturally there would be an urgent demand for hurl, particularly where factories have large contracts to fill, that would utilize all their short brush and enough long to work it. Under such conditions it is likely that the factories having contracts to fill would place orders with dealers for this long corn. Hundreds of factories might place similar orders, with the result that the various buyers would go to a new market with orders for long broom corn covering a wide range of prices, but all with definite instruction to purchase cautiously and as cheaply as possible.

Farmers, on the other hand, may have estimated the cost of raising their brush and may be willing to sell only at a much higher figure. The spread in ideas of prices on an opening market is often as much as $100 per ton. Naturally such a spread must be narrowed in order to effect a mutual agreement on prices, and to do so various tactics are resorted to.

Prior contracts between dealers and manufacturers sometimes determine opening prices, or dealers may have contracted from the growers in advance. Such contracting is purely speculative, the dealer simply taking a chance on what future conditions will develop.

Large dealers study conditions closely by sending representatives over the producing areas. The information obtained covers acreage planted compared with that of the previous year, year's crop outlook, approximate costs of production, and the like, and from this information they are able to arrive at a definite conclusion as to what prices should move the crop and thus undertake to open up the market at that figure.

Manufacturers in buying take into consideration the prevailing prices at which brooms can be sold and the future outlook generally. In almost every instance buyers, though possibly having some definite information by which they are guided in making purchases of limited quantities, buy sparingly so that the quantities first bought by any one firm have little influence in establishing definite market quotations.

This unsettled state of affairs may continue for several days or more, no one apparently willing to back his judgment by heavy buying. In the meantime, however, a number of small trades may have been made, principally to fill stress orders, or the local dealer may attempt to relieve the situation by paying good prices for a few small crops in order to stimulate a heavier movement of broom corn to market.

The disposition of the farmers to hold or to sell at the prices offered determines whether the market opens brisk or dull. With a movement started, prices move up or down according to the number of

buyers with orders, the disposition of manufacturers generally to buy or to wait, and the reluctance or anxiety of farmers to sell.

METHODS OF MARKETING.

In general, farmers market broom corn by one of two methods—through "street markets" or through "field buying" or selling on the farm. They may also market it by consigning direct to a commission house at a terminal point or by selling direct to local factories.

STREET MARKETS.

As a result of heavy production of broom corn in any locality, a street market frequently becomes the prevailing method of marketing. An open market of this kind seems best for establishing definite cash prices. There the manufacturer, the wholesale dealer, and the commission buyer are in evidence. Manufacturers may be purchasing their year's supply and wholesale dealers theirs, and since all that the wholesaler purchases must eventually go to the manufacturer, presumably at an advanced price, it appears that this type of market should be a competitive one. Dealers, too, who buy for the smaller manufacturers on a stipulated commission, find it to their advantage to purchase the brush necessary to meet their requirements as rapidly as possible and this increases the competition. Some of the outstanding features of a street market which are claimed as advantages by dealers are:

There is a saving in expense over field buying.

Farmers are better able to compare prices and determine for themselves the relative values of the different grades offered.

Farmers are better satisfied with prices obtained because they have the opinion of several buyers on the quality offered.

It is easier to examine and determine the quality on wagons.

Time is saved in buying.

The broom corn is in town ready to load and ship, so there is no danger of damage by rains before delivery after being purchased.

The farmers realize that a street market, such as that at Lindsay, Okla., attracts hundreds of buyers, but are not always so sure of the advantages. Some take the view that while sales are readily effected the methods practiced are questionable and fair prices are not obtained. Dealers are often accused of the practice known locally as "sweating." The farmers, for example, have driven in from long distances. Some perhaps have come 20 miles over the hot, dusty roads. On arrival they find an indifference prevailing among dealers, who may stroll leisurely about looking at the offerings, loiter around the hotel lobbies, or sit on the curb whittling or discussing the topics of the day, doing anything in fact but bidding on broom corn. The street in the meantime may be lined

with loads of brush with but few sales effected. Late in the day many farmers, wishing to sell and go home, are prompted to solicit bids. The bids, if obtained, are unsatisfactory and are seldom raised. The farmers get discouraged and take the best offer that has been made rather than spend another day on the market, especially when they have no assurance of a higher price. This depressed market condition, which actually exists on many days, is explained by the fact that the dealers are there to buy, but lack orders or they may have orders for kinds not being generally offered. Prices, too, being paid by some may be higher than those at which others have authority to buy. The "sweating" is a condition often experienced,

FIG. 4.—A busy day on a street market at Lindsay, Okla.

but it is generally felt by farmers that the process is a premeditated endeavor among buyers to effect big savings.

In the Lindsay district many farmers arrange with their neighbors to assist in hauling and it is not uncommon to see several loads of broom corn representing the entire crop of one grower on the streets of this market at one time. (See fig. 4.) Some growers think they sell to better advantage this way, especially if there is enough to make a carload.

During the busy season the streets are well filled by 10 o'clock in the morning and often before that time. In fact, many haul at night or late in the afternoon in order to be on the market early the following day. The choice of locations where buyers are more likely to give their loads attention may be a cause for early hauling at Lindsay, but in most street markets the location is of minor importance.

On busy days buyers are everywhere in evidence, passing around from wagon to wagon examining the bales and frequently examining the corn by sampling or "pulling" the brush. Usually each buyer has some particular kind in mind that he is especially anxious to obtain to fill certain orders he may have, or, if he is buying for speculation, because of a known shortage of a certain kind. For example, a buyer may have an order to purchase a carload of "good medium-grade brush running strong to hurl" or a car of "fancy hurl" and may examine perhaps a dozen or more loads before finding what he wants. If it is not on the market, he may make conservative bids on crops not especially desired, but which he would purchase if he could obtain them cheaply enough.

When a dealer desires to bid on a certain lot of broom corn, it is common practice to ask the owner what offer he has had on it, and the information usually is obtained. The dealer then will probably make an offer. If the farmer thinks that it is as much as he will be able to obtain he may sell, but more often he waits for other bids, particularly if it is early in the day or his broom corn is of especially good quality. An offer made by a buyer is considered binding for the day unless it is indicated that the bid shall not "stand," but markets differ in this respect, the practice in any one market governing no other. If a bid is raised, it is usually by $5 a ton.

Farmers as a rule have little idea what their broom corn will bring when they haul it to market except as they are able to judge from the sales being made or from what their neighbors may have received. The sale price depends entirely upon what a buyer is willing to give. Buyers, while better informed on conditions, usually have no definite information on the value of broom corn. The dealers who buy on a commission basis are guided by prevailing sales and by specific orders they may have to fill for manufacturers, and they make bids accordingly. These orders frequently specify "Buy at the best possible price," or "Buy at not to exceed so many dollars per ton." It is quite natural in such instances that in order to hold future business they purchase as cheaply as competition will allow. Buyers sent out by manufacturers usually are not restricted as to price, but, like the commission dealer, try to purchase as cheaply as possible. It is natural to conclude, therefore, that a glutted market ripens the opportunity for dealers to beat down prices, while if there are but few offerings of a dependable grade these will meet with ready sale at a possible advance in price.

The broom corn offered on a street market, like grain and other farm products, is for cash, and settlement is effected in full at the time of sale. Sometimes a crop may be bought and payment deferred until all is delivered, but this is done only as a matter of convenience between buyer and seller.

Bale weights and wagon-scale weights are used, depending somewhat on where the broom corn is marketed. At points where marketing is extensive the bales are weighed singly on small platform scales and the individual weights recorded. The total weight is then found and settlement made at the price stipulated. Wagon scales are employed more generally in smaller markets or at shipping points where the broom corn is hauled directly to cars for shipment. Bale weights have proved more satisfactory at country points than weights obtained from weighing the entire load, yet a great deal of the broom corn is still weighed by the load. Wagon scales are used generally for grain, live stock, and other farm products and are conveniently located at nearly all shipping points. Their use for weighing broom corn has become general except at points where this commodity is extensively handled through warehouses. While well-regulated wagon scales render efficient service, the variations are often the cause of much contention.

Platform scales are of especial advantage because bale weights are desired. In making shipments it is customary to place a tag on each bale, showing from whom it is purchased, together with the weight, so that any irregularities that may develop later may be traced. Weighing on wagon scales, of course, gives only the net weight of the load, which makes reweighing of each of the bales necessary if any irregularities in the individual bale weights are to be found.

Buyers on a street market invariably judge broom corn by sampling. The three essential factors considered are length, color, and fiber. The custom is to pull from the various bales of each load enough brush to have a representative sample of the quality of the load in question (a good-sized handful usually is obtained). This is then inspected, taking into consideration the factors mentioned, the percentage of each kind obtained, and the general quality of the offering with regard to baling and freeness from trash and seed. The classification and sampling of broom corn are discussed more fully on page 25.

FIELD BUYING.

Field buying is extensively practiced in all districts, whether or not street markets are operated. Because of the long distance broom corn must be hauled in some sections, or the uncertainty of effecting satisfactory sales at shipping points, or unsatisfactory street markets, many farmers prefer to sell on the farms, and many dealers go out into the country to buy.

While devoid of competition, this method often results in more satisfaction to the growers, for the reason that they feel themselves to be masters of the situation. It is generally felt, too, that the incentive to buy is greater when the dealers drive through the coun-

try; in fact, many growers think that buyers drive out for broom corn only when they need it. While this idea may influence the belief that the demand justifies holding for higher prices, it is not necessarily true. A buyer may have any or all of the following considerations in mind:

The obtaining of information on the quantities yet unsold and the general quality.

Opportunity of examining the brush at the time of baling, or before, in order to determine the quality more accurately.

Purchasing entire crops, whereas on street markets only a part probably would be offered.

More time for making careful examination of prospective purchases than street markets afford.

The obtaining of exceptionally good brush held off the street market.

The purchase for future delivery on account of car shortage or in order to secure uniform loading of cars.

Field buying is practiced extensively by traveling buyers. They usually select some shipping point for headquarters close to the section in which they wish to operate and drive from farm to farm. The manner of dealing in the country for the most part is the same as on a street market, except that there is more opportunity to exchange views relative to trades. All bales are carefully inspected and enough brush "pulled" to form an opinion as to the quality.

It is customary for a field buyer to make a bid. If the farmer refuses the offer, the buyer seldom will let a bid "stand" good for a later date. This leaves the transaction open—a condition that invites the grower to see the buyer again before selling to some one else.

Buying broom corn by this method is usually expensive. In certain sections where Dwarf is grown the territory traveled covers a wide area. Often only a few bales are obtained in one place or the kinds wanted may be widely scattered. Or perhaps the price offered is not inviting to growers and little is obtained. Sometimes several buyers will traverse the same territory with practically the same results before the crop is moved.

Often, too, trouble is experienced in concentrating the broom corn after it has been purchased. Some farmers sell, but later, on account of higher bids, may not deliver, which means an extra trip into the country to replace what is lacking on shipping day. Or the buyer may have purchased a crop not yet baled, or an estimated quantity, and if the market declines all of it and possibly some of a neighbor's crop may be delivered.

CONSIGNMENTS.

The methods of consigning broom corn differ little from those used with other farm products. It is shipped to a commission merchant at a terminal market, who in turn finds a purchaser and remits

the gross returns minus the commission for selling and other charges. Many factors enter into broom corn consignments that are not fully understood and cause the business generally to receive much unjust criticism.

Primarily the consigning of broom corn is the result of unsatisfactory home markets. When a farmer consigns his product to a distant market usually he expects more than the home market offers and blames the commission merchant if the returns do not measure up to his expectation. He has little or no basis on which to arrive at the value of his broom corn. He can only compare sales made in his territory with the prices he received, or compare quotations printed in trade journals or daily papers. Either would be of little real value. Quotations in daily papers are often found to run for weeks without change, to contain only indefinite descriptions, and, at best, to indicate only broadly-prevailing prices. As a result they do not furnish a satisfactory basis for comparison. Furthermore, these quotations represent selling prices, f. o. b. terminal points, and do not take into account values at country points. They are often grossly inaccurate, yet are the prices at which consignments are expected to sell. It is difficult even for trade journals to give useful quotations because of the lack of established grades.

Although consignments are often unsatisfactory, the price received may be the best obtainable. From a marketing standpoint there seems to be no good reason why the farmer should not receive a fair return on a consignment. If properly handled, it should sell on its merits. Opportunities for selling are frequent, for in all big markets to which consignments move the warehouses are visited by many dealers who have come for the purpose of buying and who expect to pay a fair price.

Some of the more important points to be considered in analyzing the situation are: (*a*) In periods of overproduction, consignments of broom corn are likely to represent the bulk of the carryover; (*b*) shippers often fail to load uniformly; (*c*) the bulk of the consigned broom corn is usually of a low grade, which brings about slow sales; (*d*) heavy consignments weaken prices; (*e*) the bulk of the trade is usually supplied before consigned broom corn is available; (*f*) dealers may be forced to buy at lower prices to compete with consignments; (*g*) growers do not take into account extra expense of holding and increased cost of selling; and (*h*) shipments are sometimes made to unreliable commission men.

In periods of known overproduction there is not the urgent demand for early selection that prevails when broom corn is scarce and low, and medium grade brush, such as constitutes the bulk of consignments, is a drug on the market. Manufacturers and dealers feel that this class of broom corn can be purchased at any time; hence

the lower grades are "slow sale" and are carried along from month to month with accruing storage, insurance, and interest, to be deducted later when returns are made. If stocks are carried for a long time, they come into competition with the new crop, which further depresses the price. The consignor, however, still holds for a high price, so it is carried over as "surplus" or as broom corn not needed at all. The consignor in the meantime is impatiently waiting for returns at prices higher than he could have obtained when the demand was better. Dealers, knowing the prevailing conditions (for example, that there is an overproduction), sell and take their loss. The commission merchant advises similar action, but without avail. In the course of time the handling charges make all chances of profit impossible and the grower finally sells for what he can get.

Lack of uniform loading in making consignments has been a factor in bringing unsatisfactory prices. In shipping many put every grade, ranging from "junk" to "choice," in one car. Later the entire car may be sold by striking an average. Thus the good brush is sacrificed to sell the poor and the results are unsatisfactory.

Heavy consignments tend to lower prices. When terminal markets have large stocks of consigned brush, commission men feel that they must be moved at some price and urge selling. The bulk of the supplies needed by manufactures is purchased early from the Standard districts, and the western stocks, which represent the bulk of the consignments, often come on the market too late for the best demand and must be sacrificed to effect quick sales.

Dealers in purchasing in the field take into account the fact that heavy consignments probably will be made and many claim that they are forced to purchase more cheaply in the field in anticipation of future declines.

Shipping to unreliable commission men has been unsatisfactory. For example, a grower may consign a car to a commission man who also buys broom corn for himself. The consigned brush, of course, is placed on the sales floor in competition with that owned by the commission man. Naturally if a liberal buyer comes to purchase it is a temptation to the dealer to push the sale of his own broom corn first and let the consigned corn remain for the less anxious customer.

Cases have come to attention where, after considerable correspondence between the local dealer and the commission man, the local dealer received a commission, unknown to the grower, on a particular consignment made because of unsatisfactory local offers.

In justice to the terminal commission men, it must be said that the returns from many consignments are satisfactory, and that in the case of many which have been unsatisfactory, offers were received by growers which would have netted them a profit, but they refused

a fair price only to be forced later by natural declines to accept a lower one.

Commission men encounter some serious difficulties. It is customary to make advances to the farmers in order to meet the obligations incurred by them in the growing and harvesting of the crop. These loans are secured by the value of the broom corn only, and this does not always prove to be adequate protection. When serious breaks in the market force prices to very low levels, it is difficult and sometimes impossible to collect from farmers the balances due on account of the advances made to them. A general feeling of distrust toward commission men makes it difficult for them to render satisfactory service.

SELLING TO LOCAL FACTORIES.

The quantity of broom corn sold to local factories by farmers is insignificant compared with the quantity sold to dealers. At many distributing points small manufacturing concerns operate possibly two or three winding machines, but more frequently some individual has a small plant of his own. By being on the ground he is able to obtain broken lots, parts of bales, or bundles at his own price. Although whole bales are also purchased, this is an outlet to the farmers for the small broken lots which ordinarily are not very salable.

SAMPLING.

A number of factors entering into the proper classification of broom corn must be considered in sampling. Besides the important items of fiber, length, and color, there are others, such as the condition of the tip, brittleness, curly growth, seed on the brush, and general condition and appearance of the bale. It is difficult to determine how much each of these affects the value. A manufacturer, for example, when he buys a car of this commodity, must expect to receive every kind of brush. One kind usually predominates, but the variations necessarily are many.

Fiber is thought by some manufacturers to be of first importance. The fineness, uniformity of size, and wearing qualities receive due consideration. Those familiar with broom corn, however, are aware that pea-green brush has the most vitality and pliability and that the bleached brush has less vitality and is more brittle.

Color is an important factor in broom corn, the pea-green being the most desirable in appearance and usually in wearing qualities. Stained broom corn has no place in a fancy broom, as it is objectionable both in appearance and in wearing qualities.

Length is important in so far as it determines the use to which the brush can economically be put. Brooms are designed so as to use the greatest amount of brush with the least waste and therefore

broom corn is closely "sized" with this in view. The large number of lengths prevalent in all broom corn has led to the manufacture of brooms of several lengths.

Spikes are objectionable as a rule. Some factories, however, use some to give a "body" to the broom, the spike part of the brush not coming below the sewing. Just which spikes are valuable is difficult to determine.

Curly broom corn is very objectionable, being both undesirable in appearance and of poor quality. The prevalence of this kind of corn in bales must be carefully noted.

Brittleness is a quality that must also be considered in sampling. The use of brittle brush is restricted largely to "insides" because in manufacturing, "turn-overs" and "outsides" require bending, and brittle brush will not well withstand this usage.

The tip of broom corn is given careful consideration in selecting brush. Brush "stripped" in thrashing is scant-tipped and its value is lowered. Some brush is poorly tipped naturally, and therefore contains a low percentage of hurl. Full-tipped brush makes a full-tipped broom, as the ends are full-fibered and make a good body at the end when clipped.

Since it is upon the sample obtained that a buyer is supposed to base his bid, it is often misleading to note the price offered. It is well known that one accustomed to sampling broom corn can "pull" almost any grade of brush desired and often this is done intentionally. A low-grade sample is sometimes pulled to justify a low bid. Pulling low-grade samples may induce the grower to accept a lower bid, or may influence another buyer's bid, but has little weight if another buyer is really interested, as every buyer samples all corn purchased.

On the other hand, close sampling is necessary to discover some unfair practices. Damaged bales may be placed on the load with the damaged portion hidden from view or not easily accessible or the thrashing may have been poorly done. Broom corn may have been baled too green, or may be shelf-burned. Unless care be used in sampling, these factors may be overlooked.

COUNTRY STORAGE.

Storage facilities, while not always essential to the successful marketing of broom corn at country points, are very desirable and have a marked bearing on the movement of the crop. In localities where there is heavy rainfall during the marketing season, much damage occurs from lack of such facilities, while in sections where exposure is not considered especially detrimental, conditions would be much improved if storage houses were more generally used. In the terminal markets storage facilities are essential.

In almost all sections where the Standard variety of broom corn is grown, curing sheds (see fig. 2) are made available for the brush as baled. Here it remains well protected, especially when the sheds are boarded up on the sides most exposed to storms. While such sheds are for temporary protection only, they may be the factor which determines whether brush shall be of high or low quality, since proper care at this stage of preparation is very important.

In striking contrast are the storage facilities in the Dwarf producing sections. "Open-air" storage is the prevailing method in certain sections and is cheap, convenient, and often satisfactory for concentrating this commodity pending shipment. Open-air storage can not be recommended, but it is practiced extensively by farmers and shippers where rainfall generally is light and where no special attention has been given to shed curing. The actual loss on account of this practice alone over a period of years is much less than is ordinarily supposed, for the brush often is not strictly first class when baled. Western Dwarf is much more inclined to turn red than is Standard. The growth often is not uniform and ordinarily does not contain the high percentage of hurl that the eastern sections produce; and since "insides" generally need not be the perfect brush expected for the "outsides" of fancy brooms, the material meets the demand for a medium-grade product. The fact that "open-air" storage is inexpensive prompts many to hesitate about building expensive sheds or warehouses when they are not seriously inconvenienced by not having them. Serious losses, however, occur when unfavorable weather does come, and the experience of western growers in the season of 1920 will undoubtedly cause many to discontinue the practice of taking chances when a suitable protection will insure them against losses such as were then sustained.

Open-air storage at shipping points (see Pl. I, fig. 2) is also common in the Dwarf sections. At Elkhart, Kans., one of the largest country-point markets, no pretense is made of housing broom corn in warehouses, and the methods used at this market are typical of those generally employed. Hundreds of bales are piled on the ground, where they remain in the open until cars are procured for shipping to terminal markets. Unfavorable weather during this time is detrimental and interferes materially in shipping.

There are few country-point markets where warehouses are available for storing broom corn. The bulk is bought for shipment as soon as cars can be procured, and if there is no place to store it is kept on the farms until it can be shipped. The fact that storage is needed only for temporary use has discouraged the building of expensive warehouses, especially if they can not be utilized for other purposes throughout the year. This has been found a serious

handicap to traveling buyers, who may wish to hold small purchases over longer periods than ordinarily needed to secure cars. Local dealers avoid this trouble by having the broom corn hauled to points where they have storage. At most shipping points the available storage ranges from 5 to 20 cars in capacity and is owned largely by local dealers.

At Lindsay, Okla., facilities are available for handling about 300 cars. The warehouses are used chiefly for handling the broom corn bought by the firms who own them. They also store temporarily for others, the handling charges being $5 per ton, which includes storage for 30 days. Patrons carry their own insurance. During the busy marketing season the storage there is entirely inadequate, and when buyers are not able to obtain cars they often pile the bales on the ground. This has proved a costly venture at times, as rains there are frequent and severe and very damaging to the fine pea-green quality marketed in that section.

It frequently happens during the busy marketing season of broom corn that cars serve as temporary storage. At congested shipping centers the arrival of a few "empties" is often the occasion of arguments among dealers to determine prior shipping rights. To obtain a car is particularly advantageous, since loading can be begun and the car held, even on demurrage, until filled. By putting a few bales in, a dealer obtains grounds for an argument for a prior right and often this is done intentionally where cars are difficult to obtain. Such use of cars should be discouraged so long as the supply of rolling stock is not equal to the general demand.

TRANSPORTATION.

In years past the bulk of broom corn was produced in New York, Ohio, Illinois, and others of the more densely populated States, and manufacturers found it practicable to operate in the producing areas. Since then production has shifted west and transportation has necessarily become one of the big factors in its marketing. Approximately 5,000 cars find their way from producing sections to the various States. A portion of the crop goes to the west coast and some to Cuba, but the greater part moves east.

With the exception of the coastwise shipments from Galveston, the crop is handled by rail, and since broom corn is not perishable the crop moves in box cars by slow freight.

METHODS OF LOADING AT COUNTRY POINTS.

Figure 5 illustrates the method of loading cars from wagons. Where warehouses are not available farmers after weighing, drive directly to the cars. The buyer usually hires two extra men and the grower completes the crew. After "up-ending" the bales

through the car door, men with hooks place the bales at either end of the car. On these are placed a second tier, until the car has been filled. For a 36-foot car, 64 to 72 bales are required, depending on the size of the bales. Care is necessary in handling bales not cross-tied to avoid pulling the end wires off, thus injuring their appearance or making reconditioning necessary at destination.

At more extensive shipping points there is usually constructed on a sidetrack a platform the top of which is even with the floor of the car. The broom corn when hauled by farmers is dumped on the platform and trucked into the cars. This method saves much labor and permits loading with less damage to the bales. Where warehouses are available, the bales are weighed and tagged when unloaded and are either stored or trucked into the cars from the platform.

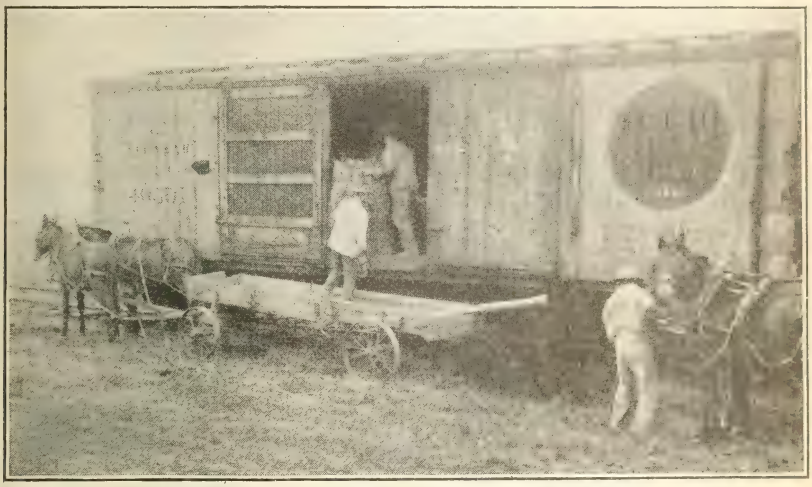

FIG. 5.—Loading cars with broom corn from wagons at country shipping points.

CHANNELS OF TRAFFIC.

While the general movement from producing to consuming points is more or less fixed, there are no regular channels through which the broom corn of any particular crop may be expected to move, the destination depending entirely on who purchases it. For example, a firm in the East may want annually 100 cars of a certain kind of brush. One season it may have been obtained in Illinois while the next year Oklahoma may have produced the kind desired, or perhaps it could be obtained from the Rio Grande Valley to better advantage. Again, certain large contracts for brooms may have been secured by firms in Chicago one year and in Baltimore the next. Thus it is seen that the movement may be entirely different from year to year.

Broadly speaking, however, it may be said that broom corn moves east from the producing sections of the Southwest, as does also the bulk of the Illinois crop. Investigations indicate that about 75 per cent of the crop west of the Mississippi moves through the Kansas City and St. Louis gateways, a large part of which moves via Wichita, Kans., for diversion. It is estimated that about 15 per cent could move to advantage via Memphis, Tenn., and Galveston, Tex., for distribution to southeastern sections. Galveston appears to be very favorably located for handling coastwise shipments from Texas and Oklahoma. Much of the Oklahoma crop, however, moves east via Wichita to Chicago and interior points, because of the present importance of Wichita as a concentration and diversion point.

Practically all movement from country points is in carload lots, and only during the last of the marketing season are less than carload shipments made. At that time buyers are sometimes unable to obtain carloads at certain points, and consignments are made to neighboring factories by the growers.

PRINCIPAL TERMINAL AND MANUFACTURING POINTS.

Most of the principal terminal and manufacturing centers to which broom corn is shipped in carload lots are as follows:

Amsterdam, N. Y.
Atlanta, Ga.
Baltimore, Md.
Chicago, Ill.
Cincinnati, Ohio.
Cleveland, Ohio.
Davenport, Iowa.
Indianapolis, Ind.
Lincoln, Nebr.
Mattoon, Ill.
Memphis, Tenn.
New Orleans, La.
New York, N. Y.
Ogden, Utah.
Oklahoma City, Okla.
Paris, Ill.
Philadelphia, Pa.
Pittsburgh, Pa.
San Francisco, Calif.
Seattle, Wash.
St. Louis, Mo.
Tampa, Fla.
Wichita, Kans.

The bulk of the broom corn grown each year comes to these markets. Large manufacturers frequently find it to their advantage to concentrate their purchases there until needed, but stocks of dealers find their way to the sales floors, from which points they are distributed throughout the year in carload and less than carload shipments to factories.

The principal country and terminal markets and manufacturing centers to which large quantities move are shown in the accompanying map (fig. 6).

COOPERATIVE MARKETING.

The success attending cooperative activities in connection with the marketing of broom corn has so far been somewhat disappointing to growers. Perhaps the greatest cooperative activity has been in the Rio Grande Valley of Texas. Development in the broom corn business in this district has been rapid. High prices stimulated

heavy production, and the alluring possibilities of producing two and perhaps three crops a year with one planting induced many to enter the business on a large scale. During the war prices were high and the business prospered to such an extent that extensive preparations were made cooperatively to provide for every convenience that might assist in putting the brush on the market in the best possible manner. Among other things, warehouses were provided. Kiln-drying plants were constructed to provide a means for curing and handling broom corn in wet weather and to enable the growers to place their brush on the market at least 15 days earlier than by shed or open air curing.

The associations extended their activities to the cooperative selling of broom corn and in fact played an important part in the mar-

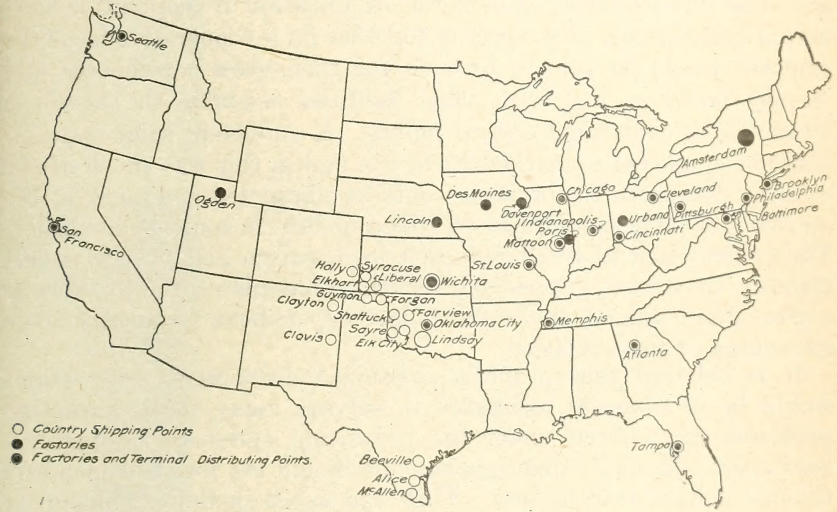

FIG. 6.—Map showing country shipping points, factories, and factories and terminal distributing points in the broom-corn industry.

keting of the southern Texas crops. They have not met with the success the producers anticipated, however, and in a number of cases the associations have ceased to function. Inefficient management and costly experiments in developing facilities for handling the crop are given as the principal causes for this condition rather than any inherent weakness in the system. Much good might have resulted if the organizations had been founded on a good, substantial basis and had been managed properly.

In New Mexico some years ago a movement was launched to organize a number of cooperative marketing associations among the broom-corn growers of that State. This movement was prompted by the unsatisfactory marketing conditions then existing and by the feeling that the marketing of broom corn at that time was under the control of a few speculative interests who operated to suit themselves.

The State marketing agent undertook to assist the farmers in formulating a plan for marketing this commodity, but for various reasons the growers did not take readily to the plan and the matter was dropped.

Notwithstanding the fact that up to the present time very little has been accomplished, there is an apparent desire on the part of many growers in the different producing districts in the different States to handle the broom-corn crop on a cooperative basis and the time appears to be rapidly approaching when some definite steps again will be taken with that end in view. The growers, however, realize that there are many difficulties to be overcome.

A good part of the service rendered to their companies by traveling buyers, and the consequent expense, no doubt, could be eliminated and substantial savings made by the organization of cooperative marketing associations. By working together on a cooperative basis the growers would be able to provide for themselves warehouses and storage facilities, and with these facilities assemble the brush in quantities at convenient central points. A competent sales manager could be employed to market the brush, and in this way much of the existing disastrous competition would be eliminated and much of the service now being performed by itinerant buyers could be abolished. The evident lack of reliable market information and proper understanding of market grades and standards has placed the growers at a great disadvantage, and unscrupulous buyers have frequently taken advantage of this situation.

It is believed that properly organized cooperative associations would be of material assistance in solving many local marketing problems encountered under the prevailing systems. Cooperative associations efficiently managed can obtain and use for their members reliable market information. They can assist in the establishment and maintenance of proper market grades and standards and in the more intelligent preparation of brush for market. In fact, it should be possible for them to obtain for the broom-corn growers more nearly the true market value of their brush.

In considering the formation of a cooperative marketing association it is essential that a careful study of the local situation be made. Among other things it is vital that there should be a sufficient volume of business available to justify the existence of an organization [3] and the employment of a competent manager. There should be a definite need for such an association in a community or district, and the mental attitude of the growers should be favorable toward an undertaking of this character. Otherwise the future loyalty of the members will be doubtful.

[3] A suggested form of by-laws may be obtained from the Bureau of Markets and Crop Estimates, Department of Agriculture, Washington, D. C.

○